☐ Lubrication systems — 46 CFR 56.50-80

- Pumps
- Heat exchangers
- Valves and controls
- Piping
- Gauges, thermometers, and alarms
- Tanks, vents, and strainers

☐ Refrigeration and air conditioning systems — 46 CFR 58.20

- Compressors
- Valves and controls
- Spare refrigerant stowage
- Gas mask (ammonia) with spare charges
- Ventilation
- Alarms

☐ Evaporators — 46 CFR 54.01-10

- Pumps
- Valves and controls

☐ Freshwater systems (potable and domestic)

- Pumps
- Valves and controls
- Sump tanks
- Tank pressure
- Air cushion supply line

☐ Steering gear systems tested — 46 CFR 58.25, 46 CFR 61.20

- Motors and pumps
- Telemotor or other control — 46 CFR 58.25-70
- Indicators and alarms — 46 CFR 58.25-25
- Instructions and markings — 33 CFR 164.34

Electrical Systems:

NOTE: *Guidance for inspecting electrical systems is detailed in NVIC 2-89.*

☐ Ship's service generators — 46 CFR 110.10, 46 CFR 111.12, SOLAS 74/78 II-1/41, MSM Ch. 6.L.4.c, MSM Vol. IV Ch. 3.D.2

- Protective guards
- Reverse power relay
- Overspeed trip (> 110% < 115%)
- Low oil pressure alarm / shutdown — 46 CFR 111.12-1

Notes:_____

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☐ Switchboards (including emergency) — 46 CFR 111.30, MSM Ch. 6.L.4.g

- Automatic bus transfer
- Ground detectors — MSM Ch. 6.L.5.g
- Personnel safeguards (guards, rails, mats, etc.)
- Drip shields
- Nameplates
- Warning notices posted
- Fuse / circuit breaker ratings

☐ Panelboards — 46 CFR 111.40

- Overcurrent devices
- Circuit directory — 46 CFR 111.40-11
- Locking device

☐ Motor controllers — 46 CFR 111.70, MSM Ch. 6.L.4.i

- Drip shields
- Disconnect switch
- Wiring diagram posted
- Remote shutdowns tested

☐ Ventilation systems — 46 CFR 111.103, SOLAS 74/78 II-1/48

- Remote shutdown tested
- Cargo fans
- Machinery space fans
- Accommodation fans

☐ Ship's service lighting systems — 46 CFR 111.75, 46 CFR 111.40

- Panelboards
- Circuit directory
- Fuses
- Circuit breakers
- Berth lights
- Globes and guards
- Explosion-proof or watertight (where required)

Notes: _____

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Diesels:

☐ Propulsion machinery — 46 CFR 58.05; SOLAS 74/78 II-1/27

- Safety devices
- Foundations
- Guards
- Controls

☐ Main propulsion diesels — 46 CFR 58.05; 46 CFR 58.10; SOLAS 74/78 II-1/27

- Fuel lines
- Air starting lines
- Exhaust system
  - Manifold
  - Exhaust pipe
  - Protective devices
- Lube oil system
  - Coolers
  - Standby L/O pump
- Engine protection
  - Remote shutdowns
  - Overspeed protection
  - Low lube oil
  - High temperature
  - Crank case
- Explosion covers

☐ Automation — 46 CFR Part 62; SOLAS 74/78 II-1/46-54; MSM Vol. IV Ch. 3.L; NVIC 1-69; NVIC 6-84

- Reduced manning

  Yes — 46 CFR 62.50

  No
- Approved test procedure
- Satisfactory test — 46 CFR 62.30-10
- Reviewed logs/records
- Interviewed personnel

Notes: _____

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☐ General electrical installation — 46 CFR 111.01-1; SOLAS 74/78 II-1/40; 46 CFR 111.60; MSM Ch. 6.L.5.h; 46 CFR 111.60-17

- Jury rigs
- Connection boxes
- Dead-end cables
- Splices — 46 CFR 111.60-19
- Grounding — 46 CFR 111.05
- Personnel safeguards (guards, rails, etc.) — 46 CFR 111.30-11
- Hazardous locations — 46 CFR 111.105; MSM Vol. IV Ch. 3.C.2.f
- Portable electrical equipment — MSM Ch. 6.L.5.i

Firefighting Equipment:

☐ Portable extinguishers (machinery spaces) — 46 CFR 34.50; 46 CFR 76.50; 46 CFR 95.50; SOLAS 74/78 II-2/6; SOLAS 74/78 II-2/21; MSM Ch. 18.I.3; NVIC 7-70; NVIC 13-86

- Required number, type, and class
- Annually serviced
- Bottles hydrostatically tested (every 5 years)
- Markings (weight and hydrostatic test date)
- Spare charges, spare extinguishers

☐ Semiportable extinguishers (machinery spaces) — 46 CFR 34.50; 46 CFR 76.50; 46 CFR 95.50; SOLAS 74/78 II-2/6; SOLAS 74/78 II-2/21; MSM Ch. 18.I.4

- Required number, type, and class
- Annually serviced
- Bottles hydrostatically tested (every 12 years)
- Controls, instructions, markings
- Hose and diffuser
- Flexible loops tested or replaced (same as bottle)

☐ Sprinkler system tested — 46 CFR 34.30; 46 CFR 76.25; 46 CFR 95.30; MSM Ch. 18.I.9; NFPA 13-1996

- Type
- Pumps
- Manifold
- Controls
- System diagram posted

Notes: _____

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☐ Fusible plugs — 46 CFR 52.01-50; 46 CFR Table 61.05-10

Examined — MSM Vol. IV Ch. 3.I.3.b

Renewed at this inspection

☐ High pressure steam piping — 46 CFR 52.01-105; 46 CFR 56.50-15; SOLAS 74/78 II-1/33

- Steam piping > 3 inches subject to boiler pressure hydrostatically tested (46 CFR 61.05-10)
- Lagging or insulation
- Hangers or supports

☐ Fuel systems — 46 CFR 56.50-65

- Service and transfer pumps
- Remote shutoff valves
- Remote cutouts
- Reliefs and bypass valves
- Strainers
- Drip pans
- Torch pots
- Piping
- Heaters

☐ Feedwater system (including condensate) — 46 CFR 52.01-115

- Pumps — 46 CFR 56.50-35; 46 CFR 56.50-45
- Injectors
- Valves and controls
- Water heaters (including deaerator)
- Water regulators
- Water level indicators
- Grease extractors
- Piping — 46 CFR 56.50-30
- Gauges and thermometers
- Air ejectors
- Condensers

Notes:_____

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Pollution Prevention:

NOTE: *Guidance for inspecting pollution prevention items is detailed in MSM Volume II, Chapter 31.*

☐ Oil record book maintained and submitted — 33 CFR 151.25; MARPOL Ax. I/20

☐ Oily water separating equipment — 33 CFR 155.380; MARPOL Ax. I/6; MSM Vol. IV Ch. 3.K.2; MSM Ch. 31.D.11

- Approved equipment
- Operationally tested
- Alarms
- Shutdowns

☐ Ballast discharge — 33 CFR 155.330; 33 CFR 155.350; 33 CFR 155.360; 33 CFR 155.370; MSM 31.D.10

- Piping system
- Outlet
- Stop valve
- Acceptable processing equipment

☐ Pollution placard posted — 33 CFR 155.450; MSM Ch. 31.D.13

☐ Oily waste retention — MSM Ch. 31.D.7

- Bilge
- Tank

Marine Sanitation Devices:

NOTE: *Guidance for inspecting marine sanitation devices is detailed in MSM Volume II, Chapter 18.K.*

☐ Marine sanitation device — 33 CFR 159.55; MSM Ch. 31.F

Type I

Type II

Type III

☐ Certified for inspected vessels — MSM Ch. 31.F.4

☐ Capacity satisfactory — MSM Ch. 18.K.7.d

Notes: _____

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Testing of Boiler Safety Valve

46 CFR 52.01-120

Step	Action	D/S	S/S	S/P
1	Determine MAWP of boiler. _____ psi			
2	Record pressure setting stamped on each valve.	____ psi	____ psi	____ psi
3	Observe opening and closing of valves and record lift and seating pressures of each valve.			
	3a. Lift pressure	____ psi	____ psi	____ psi
	3b. Seating pressure	____ psi	____ psi	____ psi
	WARNING: NEVER allow test pressure to be greater than MAWP during test. If lift pressure is above MAWP, the valve must be adjusted or replaced before test continues.			
	NOTE: *Safety valves must be tested in highest-to-lowest pressure order; typically D/S-S/S-S/P. This avoids the risk of damaging a valve or changing its setting by placing a gag on it after it has been tested.*			
4	Ensure **Step 3** pressures are within acceptable limits (± 5%) of stamped pressure. Use the following calculations.			
	4a. Step 2 (stamped pressure) x .05	____ psi	____ psi	____ psi
	4b. Step 2 (stamped pressure) – **4a** (-5%)	____ psi	____ psi	____ psi
	4c. Step 2 (stamped pressure) + **4a** (+5%)	____ psi	____ psi	____ psi
	IMPORTANT: Step 3 (lift pressure) must be between pressures recorded in **4b** and **4c**. If NOT, safety valve lift pressure MUST be adjusted within specified limits.			
5	Record superheater pressure drop value from boiler manual.		____ psi	____ psi
6	Ensure S/S and S/P lift pressures (from **Step 3**) are ≤ pressures recorded in **6b**.			
	6a. Step 5 (superheater pressure drop) + 5 psi		____ psi	____ psi
	6b. Step 3a (D/S pressure) – **6a** pressure		____ psi	____ psi
	IMPORTANT: If **Step 3a** (S/S and S/P) is NOT ≤ **6b**, S/S and S/P lift pressures MUST be adjusted.			
7	Determine blowdown and ensure it is between 2% and 4% of lift pressure for each valve. Use the following calculations.			
	7a. 3a pressure **– 3b** pressure = blowdown	____ psi	____ psi	____ psi
	7b. 3a pressure x .02 (2%)	____ psi	____ psi	____ psi
	7c. 3a pressure x .04 (4%)	____ psi	____ psi	____ psi
	IMPORTANT: If **7a** (blowdown) is not between **7b** and **7c**, blowdown setting MUST be adjusted within specified limits.			
8	After hand-relieving gear is reinstalled, observe each valve as it is hand-relieved from the fireroom or engineroom floor (46 CFR 52.01-120(d)(2)).			

D/S = Drum Safety Valve **S/S** = Superheater Safety Valve **S/P** = Superheater Pilot Valve

Section 2: Appendices

Recommended US Vessel Deficiency Procedures:

Step	Action
1	Identify deficiency.
2	Inform vessel representative.
3	Record on the *Deficiency Summary Worksheet* (next page).
4	If deficiency is corrected prior to end of inspection, go to **Step 7.**
5	If deficiency is unable to be corrected prior to end of inspection, issue CG-835 in accordance with table below.

IF deficiency:	THEN issue CG-835:
Does NOT immediately impact crew/passenger safety, hull seaworthiness, or the environment, e.g., • Missing placards	That provides a specific time for correcting deficiency, e.g., • "X" number of days
Allows vessel operations to be MODIFIED to meet less stringent requirements, e.g., • Automation defect	That restricts operation of vessel to meet current vessel conditions, e.g., • Increased crew
DOES immediately impact crew/passenger safety, hull seaworthiness, or the environment, and cannot be modified to meet less stringent requirements, e.g., • Missing or defective firefighting equipment	That requires the deficiency to be corrected prior to operating vessel ("NO SAIL" item), e.g., • Prior to carrying passengers • Prior to carrying cargo

6	Enter CG-835 data in MIDR.
7	Enter deficiency data in MSDS.
8	Initiate Report of Violation (ROV) if necessary.

Table of Contents:

Deficiency	MSIS Code	Req't. Issued / Date Completed

Deficiencies identified should be listed with MSIS codes. At completion of inspection/examination, any outstanding deficiencies shall be entered in MIDR or PSDR as appropriate. All deficiencies found (outstanding and completed) shall be entered in the Deficiency Summary. Worklist items, which serve only as memory joggers to complete inspection/examination (e.g., test emergency fire pump), should not be coded as deficiencies.

MSIS Codes for Deficiencies:

BS	Ballast	**DC**	Dry Cargo	**IC**	I/C Engine
BI	Bilge	**ES**	Electrical	**LS**	Lifesaving
BA	Boiler, Aux.	**FF**	Firefighting	**MI**	Miscellaneous
BM	Boiler, Main	**FL**	Fuel	**NS**	Navigation
CS	Cargo	**GS**	General Safety	**PP**	Propulsion
DM	Deck Machinery	**HA**	Habitation	**SS**	Steering
DL	Doc., Lics., Pmts.	**HU**	Hull		

Total Time Spent Per Activity:

Regular Personnel (Active Duty)			
ACTIVITY TYPE	ACTIVITY	TRAINING	(PERS) MI

TOTAL ADMIN HOURS	TOTAL TRAVEL HOURS

Reserve Personnel			
ACTIVITY TYPE	ACTIVITY	TRAINING	(PERS) MI

TOTAL ADMIN HOURS	TOTAL TRAVEL HOURS

Auxiliary Resources	
TOTAL BOAT HOURS	TOTAL AIRCRAFT HOURS

Conversions:

Distance and Energy				
Kilowatts (kW)	X	1.341	=	Horsepower (hp)
Feet (ft)	X	3.281	=	Meters (m)
Long Ton (LT)	X	.98421	=	Metric Ton (t)

Liquid (***NOTE:*** *Values are approximate.)*

Liquid	bbl/LT	m^3/t	bbl/m^3	bbl/t
Freshwater	6.40	1.00	6.29	6.29
Saltwater	6.24	.975	6.13	5.98
Heavy Oil	6.77	1.06	6.66	7.06
DFM	6.60	1.19	7.48	8.91
Lube Oil	7.66	1.20	7.54	9.05

Weight

1 Long Ton	=	2240 lbs	1 Metric Ton	=	2204 lbs
1 Short Ton	=	2000 lbs	1 Cubic Foot	=	7.48 gal
1 Barrel (oil)	=	5.61 ft = 42 gal = 6.29 m^3	1 psi	=	.06895 Bar = 2.3106 ft of water

Temperature: Fahrenheit = Celsius (°F = 9/5 °C + 32 and °C = 5/9 (°F – 32))

0	=	-17.8	80	=	26.7	200	=	93.3
32	=	0	90	=	32.2	250	=	121.1
40	=	4.4	100	=	37.8	300	=	148.9
50	=	10.0	110	=	43.3	400	=	204.4
60	=	15.6	120	=	48.9	500	=	260
70	=	21.1	150	=	65.6	1000	=	537.8

Pressure: Bars = Pounds per square inch

1 Bar	=	14.5 psi	5 Bars	=	72.5 psi	9 Bars	=	130.5 psi
2 bars	=	29.0 psi	6 Bars	=	87.0 psi	10 Bars	=	145.0 psi
3 Bars	=	43.5 psi	7 Bars	=	101.5 psi			
4 Bars	=	58.0 psi	8 Bars	=	116.0 psi			